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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/743,761

Applicant(s)

OYAMA, KAZUYA

Examiner

Harris C. Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-66 are pending

Response to Arguments

Applicant's arguments, see Remarks, filed June 14, 2007, with respect to the rejection(s) of claim(s) 32, 45 and 60 under 102(b) have been fully considered and are persuasive. The Applicant's argument that "Claim 32 recites that a communication apparatus...is provided with both a first interface and a second interface. In contrast, according to Nishimura, as shown in Figs. 1 and 9, a transmitter and a receiver are each provided with only one respective interface." Therefore, the rejection has been withdrawn.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

However, upon further consideration, a new ground(s) of rejection is made as follows.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-19, 23-24, 29-30, 32-38, 45-53, 60-62, 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (US 20040068655) in view of Kinoshita (US 20030007641).

Regarding Claims 1 and 4,

Nishimura teaches an AV data wireless communication system comprising: an AV data transmitter encrypting an AV data signal including a voice or a picture with a communication key signal, and transmitting the encrypted AV data signal; and an AV data receiver decrypting the received AV data signal, wherein in the case where one of the AV data transmitter and the AV data receiver is defined as a first communication apparatus and the other one is defined as a second communication apparatus, when the first communication apparatus requests the second communication apparatus to transmit the communication key signal, the second communication apparatus generates two or more setting key signals based on the communication key signal of the second communication apparatus.

The Examiner interprets the VTR device 2 (Fig. 1), as the AV data receiver and the first communication apparatus. The Examiner interprets the STB 1 (Fig. 1) as the AV data transmitter and the second communication apparatus. The Examiner interprets the communication key signal as D (Fig. 1). The Examiner interprets the two

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setting keys as $K_w(D)$ and $K_c(KW)$ in Fig. 1. The First communication device decodes the encrypted signal using the Decryption means 21, (Fig. 1).

Nishimura does not teach transmitting signals using different transfer mediums where the communications apparatus has different interfaces for each transfer medium.

Kinoshita (US 20030007641) teaches using different transfer mediums where the communications apparatus having different interfaces for each transfer medium. (*"In the wireless communication system shown in Fig. 1, the infrared-ray communication section exchanges key data with the station...the key data is received and transmitted from and to the station by a section other than the section that receives and transmits ordinary data from and to the station. In other words, the wireless communication device comprises two communication sections one for exchanging ordinary data with the station and the other for exchanging the key data required in the security process"* Paragraph [0049])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include different transfer mediums where the communication apparatus has different interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

The combined references of Nishimura and Kinoshita do not explicitly teach transmitting all of the setting key signals to the first communication apparatus using different transfer mediums, respectively, the different transfer mediums being as many

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as the setting key signals, and the first communication apparatus decodes the original communication key signal using all of the received setting key signals, and establishes communication with the second communication apparatus.

It would have been obvious to one of ordinary skill in the art at the time of the invention to send two setting key signals using two different transfer mediums.

Kinoshita teaches "the key data being transmitted can therefore be protected much more reliably than is possible with wireless communication devices that have only a section equivalent to the wireless communication section." The use of different transfer mediums to transfer data "enhances the reliability of the data communication between the device and the station."

The prior art, Nishimura and Kinoshita, include each element claimed (AV data transmitter, AV data receiver, two setting key signals, two different transfer mediums, two different interfaces) and one of ordinary skill in the art could have combined the elements as claimed by known methods (sending one code through one transfer medium and the other through a different transfer medium) and that in combination, each element merely would have performed the same function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable.

Regarding Claim 2,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 1, wherein one of the transfer mediums is a transfer medium used when the AV data signal is transmitted and received. It is inherent that the transfer medium will be the transfer medium used.

Regarding Claim 3,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 1. The cited section of Nishimura and Kinoshita do not explicitly teach further comprising: an electronic device that mediates one of the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device and the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus.

Kinoshita teaches an electronic device that mediates the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device, the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus. (Figure 1 of Kinoshita shows an electronic device, **wireless communication device 1**, which after the external system (second communication device) sends a key, the electronic device stores the key and then sends the key to the first communication apparatus) ("The CPU controls the data communication and

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security process that the Bluetooth system carries out. The memory 31 is, for example, a flash EEROM that stores the key data (link key) that is used in the security process”

Paragraph [0028])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include an electronic device that mediates different interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

Regarding Claim 5,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein in the second communication apparatus, the first setting key signal and the second setting key signal each vary according to timings at which the first and second setting key signals are generated.

(“encryption key generation means periodically or non-periodically updates the encryption key” Paragraph [0075])

Regarding Claim 6,

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Nishimura and Kinoshita teach the AV data wireless communication system according to claim 5, wherein time information is synchronized between the first communication apparatus and the second communication apparatus, using the time information upon generation of the first setting key signal and the second setting key signal.

("It [the Digital Interface] performs two types of transfer...an isochronous transfer....and an asynchronous transfer" Paragraph [0150]) This synchronous transfer inherently teaches "time information" is used.

Regarding Claim 7 and 8,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 6, wherein when the first communication apparatus decodes the communication key signal based on the first setting key signal and the second setting key signal, the first communication apparatus decodes the communication key signal using the time information.

Steps S7-S10 in Fig. 6 teach the decoding the key signals.

("It [the Digital Interface] performs two types of transfer...an isochronous transfer....and an asynchronous transfer" Paragraph [0150]). This synchronous transfer inherently teaches "time information" is used. In order to convert something

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that is asynchronous to synchronous it is inherent that time information will be changed by a certain time for synchronization reasons.

Regarding Claim 9,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein at least one of the first setting key signal and the second setting key signal is transmitted from the second communication apparatus to the first communication apparatus in a specific period.

The transmission will inherently be sent in a specific period of time.

Regarding Claim 10,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein when the first communication apparatus receives the first setting key signal, the first communication apparatus requests the second communication apparatus to transmit the second setting key signal.

The first communication apparatus requesting the second to transmit the second setting key signal is shown in Fig. 1 as "Instruction to obtain Kc" located between **23** and **13**.

Regarding Claim 11,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 10, wherein the second communication apparatus transmits the second setting key signal for a certain period after the first communication apparatus requests the second communication apparatus to transmit the second setting key signal.

Fig. 1 shows the transfer of Kc from **13** to **23**.

Regarding Claim 12,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein when the second communication apparatus receives a changeover completion signal indicating that the communication key signal is generated and stored, from the first communication apparatus, the second communication apparatus finishes transmitting the second setting key signal.

The Examiner interprets the changeover completion signal as an indication that the transfer is complete. Therefore in the step S15 in Fig. 2, that checks if the Transmission is terminated inherently requires a changeover completion signal in order to determine whether the transmission needs to be terminated.

Regarding Claims 13 and 14,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein at least one of the first communication apparatus and the second communication apparatus has a communication apparatus authentication code for authenticating the other communication apparatus. (Authentication and key exchange, **S3** and **S4** (Fig. 2)).

Regarding Claim 15,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein the second communication apparatus has a communication apparatus authentication code for authenticating the first communication apparatus, and when the second communication apparatus has transmitted the communication apparatus authentication code to the first communication apparatus through the first transfer medium, the first communication apparatus determines that the transmitted code is the communication apparatus authentication code, and transmits the communication apparatus authentication code to the second communication apparatus, and the second communication apparatus receives the communication apparatus authentication code transmitted from the first communication apparatus, and authenticates the first communication apparatus based on the received communication apparatus authentication code and the communication

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apparatus authentication code stored in the second communication apparatus.

(Authentication and key exchange, **S3** and **S4** (Fig. 2)).

Regarding Claim 16,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4, wherein one of the first transfer medium and the second transfer medium is inherently a transfer medium used when the AV data is transmitted and received.

Regarding Claim 17,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 4. The cited section of Nishimura and Kinoshita do not explicitly teach further comprising: an electronic device that mediates one of the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device and the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus.

Kinoshita teaches an electronic device that mediates the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device, the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus. (Figure 1 of Kinoshita shows an electronic device, **wireless communication device 1**, which after the external system (second communication device) sends a key, the electronic device stores the key and then sends the key to the first communication apparatus) ("The CPU controls the data communication and security process that the Bluetooth system carries out. The memory 31 is, for example, a flash EEROM that stores the key data (link key) that is used in the security process"

Paragraph [0028])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include an electronic device that mediates different interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

Regarding Claim 18,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17, wherein after transmitting the setting key signal that is one of the first setting key signal and the second setting key signal to the first communication apparatus, the electronic device deletes the setting key signal stored in the electronic device.

After transmitting the key in **S9** of Fig. 2 the STB checks to see if the key needs to be updated for the next means. Provided the system is used more than once the key will inherently be deleted when Kw is updated.

Regarding Claim 19,

Nishimura and Kinoshita teach all the limitations that Claim 19 depends on (See Regarding Claim 18). Nishimura further teaches updating or generating a new Kw everytime the system starts, which inherently deletes the old Kw.

However Nishimura does not explicitly teach deleting the setting key after receiving a changeover completion signal. The Examiner interprets the changeover completion signal as inherently present in **S15** of Fig. 6 when determining whether the transfer is complete.

It would have been obvious to one of ordinary skill in the art at the time of the invention to delete the key right after the transmission was completed instead of deleting the key upon the start of the next transmission.

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The motivation to change the time of deletion is to remove the key from the system sooner.

Regarding Claim 23,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17, wherein the second communication apparatus has a communication apparatus authentication code for authenticating the first communication apparatus, and when the communication apparatus authentication code has been transmitted from the second communication apparatus to the electronic device and stored in the electronic device, the electronic device transmits the communication apparatus authentication code to the first communication apparatus, and the first communication apparatus determines that the transmitted code is the communication apparatus authentication code and transmits the communication apparatus authentication code to the second communication apparatus, and the second communication apparatus receives the communication apparatus authentication code transmitted from the first communication apparatus and authenticates the first communication apparatus based on the received communication apparatus authentication code and the communication apparatus authentication code stored in the second communication apparatus.

(Authentication and key exchange, S3 and S4 (Fig. 2)).

Regarding Claim 24,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17, wherein the first communication apparatus and the second communication apparatus have a first communication apparatus authentication code and a second communication apparatus authentication code for authentication, respectively, and when the second communication apparatus authentication code has been transmitted from the second communication apparatus to the electronic device and stored in the electronic device, the first communication apparatus transmits the first communication apparatus authentication code to the electronic device, and the electronic device authenticates the first communication apparatus based on the received first communication apparatus authentication data and the stored second communication apparatus authentication code. (*Authentication and key exchange, S3 and S4 (Fig. 2)*).

Regarding Claims 29 and 30,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17, where the data transfer means holds communication between the first communication apparatus and the second communication apparatus.

Nishimura does not explicitly state that these connections are wired or wireless.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to either use wired or wireless communication when transmitting data.

The motivation to use either is to allow a means of communication.

Regarding Claims 32 and 45,

Nishimura and Kinoshita teach a communication apparatus comprising: a first interface connected to a first transfer medium through which an AV data signal including a voice or a picture is transmitted and received; a cipher key storage unit storing a communication key signal for encrypting or decrypting the AV data signal; and a cipher key changeover control unit generating the communication cipher key by performing a specific arithmetic operation, and storing the communication cipher key in the cipher key storage unit, wherein when the communication apparatus requests the communication key signal of a communication apparatus other than the communication apparatus so as to communicate and connect with the other communication apparatus, the communication apparatus receives a first setting key signal and a second setting key signal generated by the other communication apparatus based on the communication key signal at the first interface, and the cipher key changeover control unit performs the specific arithmetic operation using the received first and second

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setting key signals, thereby decoding the communication key signal and storing the decoded communication key signal in the cipher key storage unit.

The Examiner interprets the first interface as the Data transfer means (44, Fig. 9), and the second interface as Data transfer means (45, Fig. 9). The Examiner interprets the cipher key storage unit as Kco storage means (49, Fig. 9) and the cipher key changeover control unit as Kco generation means (39).

Nishimura does not teach transmitting signals using different transfer mediums where the communications apparatus has different interfaces for each transfer medium.

Kinoshita (US 20030007641) teaches using different transfer mediums where the communications apparatus having different interfaces for each transfer medium. (*"In the wireless communication system shown in Fig. 1, the infrared-ray communication section exchanges key data with the station...the key data is received and transmitted from and to the station by a section other than the section that receives and transmits ordinary data from and to the station. In other words, the wireless communication device comprises two communication sections one for exchanging ordinary data with the station and the other for exchanging the key data required in the security process"* Paragraph [0049])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include different transfer mediums where the communication apparatus has separate interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

The combined references of Nishimura and Kinoshita do not explicitly teach transmitting all of the setting key signals to the first communication apparatus using different transfer mediums, respectively, the different transfer mediums being as many as the setting key signals, and the first communication apparatus decodes the original communication key signal using all of the received setting key signals, and establishes communication with the second communication apparatus.

It would have been obvious to one of ordinary skill in the art at the time of the invention to send two setting key signals using two different transfer mediums.

Kinoshita teaches "the key data being transmitted can therefore be protected much more reliably than is possible with wireless communication devices that have only a section equivalent to the wireless communication section." The use of different transfer mediums to transfer data "enhances the reliability of the data communication between the device and the station."

The prior art, Nishimura and Kinoshita, include each element claimed (AV data transmitter, AV data receiver, two setting key signals, two different transfer mediums, two different interfaces) and one of ordinary skill in the art could have combined the elements as claimed by known methods (sending one code through one transfer medium and the other through a different transfer medium) and that in combination, each element merely would have performed the same function as it did separately.

One of ordinary skill in the art would have recognized that the results of the combination were predictable.

Regarding Claim 33,

Nishimura and Kinoshita teach the communication apparatus according to claim 32, wherein when the communication key signal is decoded based on the first setting key signal and the second setting key signal, time information is utilized while changing the time information by as much as a predetermined time.

In Fig. 2, S8 and S10 show the communication key being decoded based on the first and the second setting key signal. The Examiner interprets that "time information is utilized while changing the time information by as much as a predetermined time" as the system is driven by a clock. The Examiner notes that a clock inherently drives the system in Nishimura.

Regarding Claim 34,

Nishimura and Kinoshita teach the communication apparatus according to claim 32, wherein the communication apparatus receives at least one of the first setting key signal and the second setting key signal in a specific period.

In Fig. 2, S8 and S10 show the communication apparatus receiving the setting key signals.

Regarding Claim 35,

Nishimura and Kinoshita teach the communication apparatus according to claim 32, wherein when receiving the first setting key signal, the communication apparatus requests the other communication apparatus to transmit the second setting key signal.

After the first setting key is received in S8 in Fig. 2, the system inherently requests the other communication apparatus to transmit the second signal. If the request is not sent the system will not work because otherwise the communication apparatus will not be able to decrypt the second communication key.

Regarding Claim 36,

Nishimura and Kinoshita teach the communication apparatus according to claim 32, wherein the communication apparatus has a communication apparatus authentication code for authenticating the other communication apparatus. (Fig. 2, Authentication and key exchange **S3** and **S4**)

Regarding Claim 37,

Nishimura and Kinoshita teach the communication apparatus according to claim 32, wherein the communication apparatus has a communication apparatus

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authentication code based on which the other communication apparatus authenticates the communication apparatus. (Fig. 2, Authentication and key exchange **S3** and **S4**)

Regarding Claim 38,

Nishimura and Kinoshita teach the communication apparatus according to claim 32. The cited section of Nishimura and Kinoshita do not explicitly teach further comprising: an electronic device that mediates one of the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device and the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus.

Kinoshita teaches an electronic device that mediates the transfer mediums, wherein after the second communication apparatus transmits one of the setting key signals to the electronic device, the electronic device stores the transmitted setting key signal, the electronic device transmits the setting key signal to the first communication apparatus. (Figure 1 of Kinoshita shows an electronic device, **wireless communication device 1**, which after the external system (second communication device) sends a key, the electronic device stores the key and then sends the key to the first communication apparatus) ("The CPU controls the data communication and security process that the Bluetooth system carries out. The memory 31 is, for example,

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a flash EEROM that stores the key data (link key) that is used in the security process”

Paragraph [0028])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include an electronic device that mediates different interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

Regarding Claim 46,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein the first setting key signal and the second setting key signal each vary according to timings at which the first setting key signal and the second setting key signal are generated. (*“encryption key generation means periodically or non-periodically updates the encryption key” Paragraph [0075]*)

Regarding Claim 47,

Nishimura and Kinoshita teach the communication apparatus according to claim 46, wherein when the first setting key signal and the second setting key signal are

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generated, time information on generation of the first setting key signal and the second setting key signal is used to thereby generate the first setting key signal and the second setting key signal vary every time the first setting key signal and the second setting key signal are generated.

The Examiner interprets Claim 47 as the system using a clock during the generation of the keys. The system of Nishimura inherently uses a clock throughout the entire system.

Regarding Claim 48,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein at least one of the first setting key signal and the second setting key signal is inherently transmitted in a specific period.

Regarding Claim 49,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein when transmission of the second setting key signal is requested after a communication apparatus other than the communication apparatus receives the first setting key signal, the communication apparatus transmits the second setting key signal for a certain period.

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The first communication apparatus requesting the second to transmit the second setting key signal is shown in Fig. 1 as "Instruction to obtain Kc" located between 23 and 13.

Regarding Claim 50,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein when receiving a changeover completion signal indicating that the communication key signal is generated and stored, from a communication apparatus other than the communication apparatus, the communication apparatus finishes transmitting the second setting key signal.

The Examiner interprets the changeover completion signal as an indication that the transfer is complete. Therefore in the step S15 in Fig. 2, that checks if the Transmission is terminated inherently requires a changeover completion signal in order to determine whether the transmission needs to be terminated.

Regarding Claims 51 and 52,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein the communication apparatus has a communication apparatus authentication code for authenticating a communication apparatus other than the communication apparatus.

(Fig. 2, Authentication and key exchange **S3** and **S4**)

Regarding Claim 53,

Nishimura and Kinoshita teach the communication apparatus according to claim 45, wherein the second transfer medium is a transfer medium that mediates an electronic device, and the communication apparatus medium transmits the second setting key signal to the electronic device.

(Fig. 2, line between S9 and S10)

Regarding Claim 60,

Nishimura and Kinoshita teach an electronic device wherein the electronic device is employed in the AV data wireless communication system according to claim 17, and after receiving the second setting key signal transmitted from the second communication apparatus through the interface and storing the second setting key signal in the setting key signal storage unit, the electronic device transmits the second setting key signal stored in the setting key signal storage unit to the first communication apparatus through the interface.

The Examiner interprets the first interface as the Data transfer means (44, Fig. 9), The Examiner interprets the cipher key storage unit as Kco storage means (49, Fig. 9) and the cipher key changeover control unit as Kco generation means (39).

Nishimura does not teach transmitting signals using different transfer mediums where the communications apparatus has different interfaces for each transfer medium.

Kinoshita (US 20030007641) teaches using different transfer mediums where the communications apparatus having different interfaces for each transfer medium. (*"In the wireless communication system shown in Fig. 1, the infrared-ray communication section exchanges key data with the station...the key data is received and transmitted from and to the station by a section other than the section that receives and transmits ordinary data from and to the station. In other words, the wireless communication device comprises two communication sections one for exchanging ordinary data with the station and the other for exchanging the key data required in the security process"* Paragraph [0049])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the AV wireless communication system of Nishimura to include different transfer mediums where the communication apparatus has different interfaces for each transfer medium.

The motivation is that Kinoshita teaches a well known method of transferring data and one of ordinary skill would have been able to modify Nishimura to include two different interfaces for transferring data.

The combined references of Nishimura and Kinoshita do not explicitly teach transmitting all of the setting key signals to the first communication apparatus using

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different transfer mediums, respectively, the different transfer mediums being as many as the setting key signals, and the first communication apparatus decodes the original communication key signal using all of the received setting key signals, and establishes communication with the second communication apparatus.

It would have been obvious to one of ordinary skill in the art at the time of the invention to send two setting key signals using two different transfer mediums.

Kinoshita teaches "the key data being transmitted can therefore be protected much more reliably than is possible with wireless communication devices that have only a section equivalent to the wireless communication section." The use of different transfer mediums to transfer data "enhances the reliability of the data communication between the device and the station."

The prior art, Nishimura and Kinoshita, include each element claimed (AV data transmitter, AV data receiver, two setting key signals, two different transfer mediums, two different interfaces) and one of ordinary skill in the art could have combined the elements as claimed by known methods (sending one code through one transfer medium and the other through a different transfer medium) and that in combination, each element merely would have performed the same function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable.

Regarding Claim 61 and 62,

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Nishimura and Kinoshita teach the electronic device according to claim 60. Nishimura further teaches updating or generating a new Kw everytime the system starts, which inherently deletes the old Kw.

However Nishimura does not explicitly teach deleting the setting key after receiving a changeover completion signal, or directly after the transfer. The Examiner interprets the changeover completion signal as inherently present in **S15** of Fig. 6 when determining whether the transfer is complete.

It would have been obvious to one of ordinary skill in the art at the time of the invention to delete the key right after the transmission was completed instead of deleting the key upon the start of the next transmission.

The motivation to change the time of deletion is to remove the key from the system sooner.

Regarding Claims 64 and 65,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17, where the data transfer means holds communication between the first communication apparatus and the second communication apparatus.

Nishimura does not explicitly state that these connections are wired or wireless.

It would have been obvious to one of ordinary skill in the art at the time of the invention to either use wired or wireless communication when transmitting data.

The motivation to use either is to allow a means of communication.

Claims 20-22, 31, 39-40, 54-55 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura and Kinoshita further in view of Leporini (US 2003/0182579).

Regarding Claim 20,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17.

However the combined references do not teach the electronic device has an electronic device authentication code based on which at least one of the first communication apparatus and the second communication apparatus authenticates the electronic device.

Leporini teaches a client-server session module between the Security module and a chosen device, particularly an authentication mechanism. (Paragraph [0439])

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Nishimura with the teachings of Leporini.

The motivation to combine is to provide a level of security between the device and the security module.

Regarding Claims 21 and 22,

The combined teachings teach the limitations of the AV data wireless communication system according to claim 20. Nishimura further teaches the second communication apparatus transmits the setting key signal to the electronic device and the first communication apparatus receives the setting key signal from the electronic device. (*Authentication and key exchange, S3 and S4, Fig. 6*)

Regarding Claim 31,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 30.

Nishimura does not teach that the electronic device is a remote controller that transmits an operation signal for operating at least one of the first communication apparatus and the second communication apparatus.

Leporini teaches that "the receiver/decoder is additionally adapted to receive inputs from an infra-red remote control via a control unit" (Paragraph [0173]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura with an infrared remote controller and receiver.

The motivation to combine is that an infrared remote control is a means of transferring data wirelessly.

Regarding Claim 39,

Nishimura and Kinoshita teach the communication apparatus according to claim 38 Nishimura does not teach the communication apparatus has an electronic device authentication code based on which the electronic device is authenticated.

Leporini teaches a client-server session module between the Security module and a chosen device, particularly an authentication mechanism. (Paragraph [0439])

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Nishimura with the teachings of Leporini.

The motivation to combine is to provide a level of security between the device and the security module.

Regarding Claim 40,

The combined teachings teach the limitations of communication apparatus according to claim 39, Nishimura further, the communication apparatus receives the setting key signal from the electronic device. (*Authentication and key exchange, S3 and S4, Fig. 6*)

Regarding Claim 54,

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Nishimura and Kinoshita teach the communication apparatus according to claim 53. Nishimura and Kinoshita do not explicitly teach wherein the communication apparatus has an electronic device authentication code based on which at least one of the first communication apparatus and the second communication apparatus authenticates the electronic device.

Leporini teaches a client-server session module between the Security module and a chosen device, particularly an authentication mechanism. (Paragraph [0439])

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Nishimura with the teachings of Leporini.

The motivation to combine is to provide a level of security between the device and the security module.

Regarding Claim 55,

The combined teachings teach the limitations of the AV data wireless communication system according to claim 54. Nishimura further teaches the second communication apparatus transmits the setting key signal to the electronic device and the first communication apparatus receives the setting key signal from the electronic device. (*Authentication and key exchange, S3 and S4, Fig. 6*)

Regarding Claim 63,

Nishimura and Kinoshita teach the electronic device according to claim 60.

Nishimura and Kinoshita do not teach the communication apparatus has an electronic device authentication code based on which the electronic device is authenticated.

Leporini teaches a client-server session module between the Security module and a chosen device, particularly an authentication mechanism. (Paragraph [0439])

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Nishimura with the teachings of Leporini.

The motivation to combine is to provide a level of security between the device and the security module.

Regarding Claim 66,

The combined teachings of Nishimura Kinoshita and Leporini teach the System according to Claim 65.

The limitations taught in 65 however do not teach that the electronic device is a remote controller that transmits an operation signal for operating at least one of the first communication apparatus and the second communication apparatus.

Leporini teaches that "the receiver/decoder is additionally adapted to receive inputs from an infra-red remote control via a control unit" (Paragraph [0173]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura and Leporini with an infrared remote controller and receiver.

The motivation to combine is that an infrared remote control is a means of transferring data wirelessly.

Claims 25-26, 41-42 and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura and Kinoshita in further view of Takeda (US 6512767).

Regarding Claims 25 and 26,

Nishimura and Kinoshita teach the AV data wireless communication system according to claim 17.

However Nishimura does not teach: the first communication apparatus and the second communication apparatus comprise a connection state notification unit notifying that the first communication apparatus and the second communication apparatus are communicable with the electronic device.

Takeda in Column 7 line 48-50 teaches "a connection state notification destination device." Takeda inherently teaches that this connection state notification destination device will notify the device when the connection state occurs.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura with the teachings of Takeda.

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The motivation to combine is to allow for detection of a connection.

Regarding Claim 41 and 42,

Nishimura and Kinoshita teach the communication apparatus according to claim 38.

Nishimura does not teach: a connection state notification unit notifying that the communication apparatus is communicable with the electronic device.

Takeda in Column 7 line 48-50 teaches "a connection state notification destination device." Takeda inherently teaches that this connection state notification destination device will notify the device when the connection state occurs.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura with the teachings of Takeda.

The motivation to combine is to allow for detection of a connection.

Regarding Claim 56-57,

Nishimura and Kinoshita teach the communication apparatus according to claim 53,

Nishimura does not teach: a connection state notification unit notifying that the communication apparatus is communicable with the electronic device.

Takeda in Column 7 line 48-50 teaches "a connection state notification destination device." Takeda inherently teaches that this connection state notification destination device will notify the device when the connection state occurs.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura with the teachings of Takeda.

The motivation to combine is to allow for detection of a connection.

Claims 27-28, 43-44 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura, Kinoshita, Takeda, further in view of Leporini.

Regarding Claim 27,

The combined teachings of Nishimura Kinoshita and Takeda teach the AV data wireless communication system according to claim 26.

The above references do not teach that the electronic device is a remote controller that holds optical communication with the first communication apparatus and the second communication apparatus.

Leporini teaches that "the receiver/decoder is additionally adapted to receive inputs from an infra-red remote control via a control unit" (Paragraph [0173]). Where it is understood that infra-red remote controllers and their receivers inherently require: a first light reception/emission unit dedicated to the electronic device; and a second light reception/emission unit for holding optical communication with a remote controller.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura and Takeda with an infrared remote controller and receiver.

The motivation to combine is that a infrared remote control is a means of transferring data wirelessly.

Regarding Claim 28,

The combined teachings of Nishimura Kinoshita and Takeda teach communication apparatus according to claim 27.

The above references do not teach where each of the first communication apparatus and the second communication apparatus includes a cap that covers the first light reception/emission unit, the first light reception/emission unit being provided within each of the first communication apparatus and the second communication apparatus.

It would have been obvious to one of ordinary skill in the art to put a cap on the light reception/emission unit.

The motivation of putting a cap on is to protect the light reception/emission unit.

Regarding Claim 43,

The combined teachings of Nishimura Kinoshita and Takeda teach communication apparatus according to claim 42.

The above references do not teach that the electronic device is a remote controller that holds optical communication with the first communication apparatus and the second communication apparatus.

Leporini teaches that "the receiver/decoder is additionally adapted to receive inputs from an infra-red remote control via a control unit" (Paragraph [0173]). Where it is understood that infra-red remote controllers and their receivers inherently require: a first light reception/emission unit dedicated to the electronic device; and a second light reception/emission unit for holding optical communication with a remote controller.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura and Takeda with an infrared remote controller and receiver.

The motivation to combine is that an infrared remote control is a means of transferring data wirelessly.

Regarding Claim 44,

The combined teachings of Nishimura, Kinoshita and Takeda teach communication apparatus according to claim 43.

The above references do not teach where each of the first communication apparatus and the second communication apparatus includes a cap that covers the first light reception/emission unit, the first light reception/emission unit being provided within each of the first communication apparatus and the second communication apparatus.

It would have been obvious to one of ordinary skill in the art to put a cap on the light reception/emission unit.

The motivation of putting a cap on is to protect the light reception/emission unit.

Regarding Claim 58,

The combined teachings of Nishimura Kinoshita and Takeda teach communication apparatus according to claim 57.

The above references do not teach that the electronic device is a remote controller that holds optical communication with the first communication apparatus and the second communication apparatus.

Leporini teaches that "the receiver/decoder is additionally adapted to receive inputs from an infra-red remote control via a control unit" (Paragraph [0173]). Where it is understood that infra-red remote controllers and their receivers inherently require: a first light reception/emission unit dedicated to the electronic device; and a second light reception/emission unit for holding optical communication with a remote controller.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nishimura and Takeda with an infrared remote controller and receiver.

The motivation to combine is that an infrared remote control is a means of transferring data wirelessly.

Regarding Claim 59,

The combined teachings of Nishimura Kinoshita and Takeda teach communication apparatus according to claim 58.

The above references do not teach where each of the first communication apparatus and the second communication apparatus includes a cap that covers the first light reception/emission unit, the first light reception/emission unit being provided within each of the first communication apparatus and the second communication apparatus.

It would have been obvious to one of ordinary skill in the art to put a cap on the light reception/emission unit.

The motivation of putting a cap on is to protect the light reception/emission unit.

Conclusion

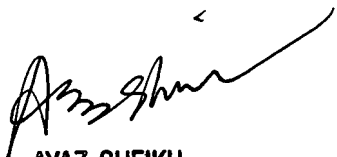
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harris C. Wang whose telephone number is 5712701462. The examiner can normally be reached on M-F 8-5:30, Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AYA Z. R. SHEIKH can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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